

WHAT IS CLAIMED IS:

1. A linear motor, comprising:  
a coil; and  
a plurality of magnets disposed along a  
5 central axis of said coil, wherein magnetization  
directions of said plurality of magnets have  
different tilts with respect to the central axis.
2. A linear motor according to Claim 1,  
10 wherein the magnetization directions of said  
plurality of magnets are tilted in opposite  
directions with respect to the central axis.
3. A linear motor according to Claim 2,  
15 wherein said plurality of magnets are disposed so  
that the total sum of the tilts of the  
magnetization directions with respect to the  
central axis becomes equal to or approximately  
equal to zero.  
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4. A stage system, comprising:  
a linear motor as recited in Claim 1;  
and  
a stage to be driven by said linear  
25 motor.
5. An exposure apparatus, comprising:

a stage system as recited in Claim 4,  
for positioning at least one of an original and a  
substrate; and

means for exposing the substrate with  
5 the original.

6. A device manufacturing method,  
comprising the steps of:

preparing an exposure apparatus as  
10 recited in Claim 5; and

producing a device by use of the  
exposure apparatus.

7. A linear motor, comprising:  
15 a coil;  
a plurality of first magnet groups  
having polar directions disposed in periodically  
different directions; and

a plurality of second magnet groups  
20 having polar directions disposed in periodically  
different directions,

wherein, in a set including a  
predetermined magnet of said first magnet groups  
and a magnet of said second magnet groups,  
25 corresponding to the predetermined magnet,  
magnetization directions of the set of magnets  
have mutually different tilts with respect to the

central axis of said coil.

8. A linear motor according to Claim 7,  
wherein, in a set including a predetermined magnet  
5 of said first magnet groups and a magnet of said  
second magnet groups, corresponding to the  
predetermined magnet, magnetization directions of  
the set of magnets are tilted in opposite  
directions with respect to the central axis.

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9. A linear motor according to Claim 8,  
wherein, in a set including a predetermined magnet  
of said first magnet groups and a magnet of said  
second magnet groups, corresponding to the  
15 predetermined magnet, the magnets are disposed so  
that the total sum of the tilts of the  
magnetization directions of the magnets become  
equal to or approximately equal to zero.

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10. A linear motor according to Claim 7,  
wherein said coil includes a first coil effective  
to produce a Lorentz's force between it and said  
first magnet groups, and a second coil effective  
to produce a Lorentz's force between it and said  
25 second magnet groups.

11. A linear motor according to Claim 10,

further comprising a first yoke provided at a side  
of said first coil remote from said first magnet  
groups, and a second yoke provided at a side of  
said second coil remote from said second magnet  
5 groups.

12. A stage system, comprising:  
a stage; and  
a linear motor including (i) a coil,  
10 (ii) a plurality of first magnet groups having  
polar directions disposed in periodically  
different directions, and (iii) a plurality of  
second magnet groups having polar directions  
disposed in periodically different directions,  
15 wherein, in a set including a  
predetermined magnet of said first magnet groups  
and a magnet of said second magnet groups,  
corresponding to the predetermined magnet,  
magnetization directions of the set of magnets  
20 have mutually different tilts with respect to the  
central axis of said coil.

13. An exposure apparatus for exposing a  
substrate with a pattern of an original, said  
25 apparatus comprising:  
a stage for moving at least one of an  
original and a substrate; and

a linear motor for driving said stage,  
said linear motor including (i) a coil, (ii) a  
plurality of first magnet groups having polar  
directions disposed in periodically different  
5 directions, and (iii) a plurality of second magnet  
groups having polar directions disposed in  
periodically different directions,

wherein, in a set including a  
predetermined magnet of said first magnet groups  
10 and a magnet of said second magnet groups,  
corresponding to the predetermined magnet,  
magnetization directions of the set of magnets  
have mutually different tilts with respect to the  
central axis of said coil.

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